

Agriculture

EFFECT OF MEDIA AND MOISTURE ON ROOTING OF *GYMNEMA SYLVESTRE* STEM CUTTINGS

K.K.L.U. Arunakumara^{1*}, U. Wickramasinghe¹, B.C. Walpola² and S. Subasinghe¹

¹Department of Crop Science, Faculty of Agriculture, University of Ruhuna, Mapalana, Kamburupitiya.

²Department of Soil Science, Faculty of Agriculture, University of Ruhuna, Mapalana, Kamburupitiya.

Abstract

Medicinal plants have saved man's life on innumerable occasions and for this reason their over-use concerns everyone. As *Gymnema sylvestre*, a rare medicinal plant species used for the treatment of diabetes remains wild and undomesticated, the present study was focused on vegetative propagation of *G. sylvestre* using stem cuttings. Double-nodal stem cuttings were planted in poly bags filled with four different potting media i.e. sand (RM1), 1:1 mixture of sand and top soil (RM2), 1:1:1 mixture of top soil, sand and compost (RM3) and top soil (RM4) in order to assess the effect of media on rooting. Three different watering frequencies i.e. once a day (W1), once in two days (W2) and once in three days (W3) were used in another experiment to assess the effect of moisture on rooting. The completely randomized block design was used in setting the cuttings. Assessment was done after 1.5, 2.5 and 3.5 months, for the following parameters: percentage survival of cuttings, number of roots per cutting, length of longest root per cutting and root biomass per cutting.

Results revealed that the best rooting medium for *Gymnema* stem cuttings was RM3 where number of roots per cutting and length of the longest root were significantly ($P > 0.05$) higher than that of the other treatments. However, no significant ($P > 0.05$) differences were observed in root biomass. It was revealed that watering once in two days (W2) was better than the other two treatments in terms of number of roots per cutting, length of longest root and root biomass. Adequate water retention capacity of the RM3 may explain the present results and furthermore it could be concluded that rooting mixture of top soil, sand and compost (1:1:1) watered once in two days would be ideal in inducing roots of *Gymnema* stem cuttings.

Keywords: *Gymnema sylvestre*, vegetative propagation, rooting media

STUDIES ON THE VEGETATION OF A SITE INFLUENCED BY THE NILWALA PROJECT

K.K.L.U. Arunakumara¹, U. Wickramasinghe¹ and B.C. Walpola²

¹Department of Crop Science, Faculty of Agriculture, University of Ruhuna, Mapalana, Kamburupitiya.

²Department of Soil Science, Faculty of Agriculture, University of Ruhuna, Mapalana, Kamburupitiya.

Abstract

The study site described in this paper was previously under agroforestry, but has been severely damaged by the Nilwala project in 1987. The soil has been cut and removed from the site in order to construct dams. The present study was carried out with the aim of quantifying and describing the vegetation in the process of ecosystem recovery. Ten 10 × 10 m plots were established along the middle axis of the site covering a total area of about 12 ha. The height of each plant species was recorded in each plot after being botanically identified. In addition five small plots (1 × 1 m) per each large plot were randomly selected in order to study the grass species. The origin of plants was determined by very gently excavating down around the plant to determine whether it originated from a buried seed or was a sprout from a pre-existing plant.

The vegetation was dominated by *Dicranopteris linearis* (Gleicheniaceae) followed by natural grasses (Graminae). *Alstonia macrophylla* was by far the most abundant and dominant woody species followed by *Cinnamon verum*, *Acacia mangium*, *Osbeckia octandra* and *Ixora coccinea* etc. There were only sixteen species belonging to twelve families namely Apocynaceae, Burseraceae, Compositae, Gleicheniaceae, Hippocrateaceae, Lauraceae, Leguminosae, Malvaceae, Melastomataceae, Rhamnaceae, Rubiaceae and Graminae. The plant population occurred at the site was amounted to 40002 ha⁻¹ in which only about 1 % had the plant height exceeding 1 m. Observations made during the study revealed that there were no woody species on the site which re-established by re-sprouting. Furthermore there were no viable buried seeds. It could be concluded that even eighteen years after the disturbance, successional development was poor and thus human intervention is needed to facilitate the ecosystem recovery.

Keywords: Nilwala Project; vegetation, successional development